Transition from Education to Labor Market in Turkey

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1. Introduction

To what extent does education and training contribute to employment opportunities in Turkey? To what extent do knowledge and skills that graduates obtain from years of schooling and training relate to their jobs? One of the major issues confronting secondary and higher education in many countries is whether graduates can obtain jobs that relate to their education and training. For Turkey, the question is where do graduates acquire the occupational skills to perform well in the labor market in a way that would increase the probability of employment in the country. If formal education does not suffice to provide secondary education graduates with the knowledge or skills to perform successfully in the labor market, are there occupational measures such as apprenticeship training and course attendance programs that will bridge the gap? The results of the 1997 Formal and Adult Education Survey (FAES) in Turkey indicate that approximately 85 percent of university graduates obtained jobs that were related to their education in the period between 1980 and 1989 but the rate declined to 80 percent between 1990 and 1997. Among graduates who were employed at jobs not related to their education, 41 percent claimed that they were not able to find a job related to their education.

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1.1. Purpose of the Study

The primary objective of the study is twofold. First, the study tests the relationship between graduates' level of education and the job they presently hold by examining whether vocational secondary school and university graduates are able to obtain jobs directly related to their education and training. Additionally, the study assesses whether the education obtained by secondary vocational and university graduates has a favorable impact on their job performance. Second, the study examines the effect of apprenticeship training scheme on employment probability in Turkey. In some countries such as Germany and Switzerland, apprenticeship program plays an important role in the transition from school to work. The impact of apprenticeship program on school-to-work transition will be analyzed in the context of Turkey.

1.2. Significance of the Study

Numerous studies on education and labor market outcomes in Turkey, with a conceptual focus on the link between education and employment/wages, have been conducted in the past. However, none of these studies has determined the effect of education on equipping individuals with adequate and an appropriate level of knowledge and skills to meet the demand in the labor market. In light of this, our study postulates a connection between education/training and level of unemployment.

Issues related to vocational education program are critically important in Turkey but they have never been systematically analyzed by type of vocational secondary schools. More importantly, there has been no empirical work in Turkey on measuring the effectiveness of apprenticeship training and course attendence programs. Our study not only examines the differential links between education and employment for type of vocational program but this is the first study attempting to measure the effectiveness of apprenticeship training and course attendance on the probability of employment. The results could generate important policies concerning Turkey's education system, especially at a time when educators worldwide are increasingly advocating a greater emphasis on education/training.

1.3. Data Utilized for the Study

This study will make use of the Formal and Adult Education Survey of Turkey

(FAES - Education and Training Survey) which was carried out as part of the October 1997 Household Labor Force Survey (HLFS). It was conducted by the State Institute of Statistics of Turkey for the purpose of investigating the linkage between education and employment status. The survey covers 21,004 households (15,530 in urban and 5,474 in rural areas) in eight regions of Turkey, and includes 51,022 observations (26,388 females and 24,634 males). For this study, we restricted the sample to individuals between 12 and 65 years of age. Table 1 describes the main characteristics of the raw data.

In Table 1, the number of years of experience that female individuals between 12 and 65 years of age have is 22 compared with 21 years for male individuals. With regards to education we note the following:

- About 24 percent of females are in the category of non-graduates (this category includes illiterates and those who are literate but do not have a diploma);

Table 1. Mean and Standard Deviation of the Variables, Turkey, 1997

Variables	Total	Female	Male
Experience	21.27 (16.0)	21.84 (16.3)	20.67 (15.7)
experience square	708.19 (851.2)	741.69 (887.0)	672.32 (809.6)
Education[a]:			
non-graduate	0.1604 (0.37)	0.2366 (0.43)	0.0787 (0.27)
Primary	0.5302 (0.50)	0.5225 (0.50)	0.5384 (0.50)
Middle	0.1209 (0.33)	0.0928 (0.29)	0.1511 (0.36)
High School	0.0959 (0.29)	0.0824 (0.28)	0.1103 (0.31)
Voc. High	0.0426 (0.20)	0.0299 (0.17)	0.0562 (0.23)
University	0.0501 (0.22)	0.0359 (0.19)	0.0652 (0.25)
Urban[a]	0.7150 (0.45)	0.7124 (0.45)	0.7178 (0.45)
Female[a]	0.5172 (0.50)	1.0000	0.0000
Apprenticeship[a]	0.0061 (0.08)	0.0015 (0.04)	0.0110 (0.11)
Course Training[a]	0.0412 (0.20)	0.0486 (0.22)	0.0333 (0.18)
Months of Appr.	0.1741 (2.72)	0.0311 (1.09)	0.3274 (3.74)
Regions[a]:			
Marmara	0.2792 (0.45)	0.2741 (0.45)	0.2846 (0.45)
Aegean	0.1480 (0.36)	0.1482 (0.36)	0.1478 (0.36)
Meditterranean	0.1217 (0.33)	0.1209 (0.33)	0.1226 (0.33)
Central Anatolia	0.1800 (0.38)	0.1823 (0.39)	0.1776 (0.38)
Black Sea	0.1078 (0.31)	0.1099 (0.31)	0.1057 (0.31)
East Anatolia	0.0702 (0.26)	0.0713 (0.26)	0.0689 (0.25)
Southeast A.	0.0931 (0.29)	0.0933 (0.29)	0.0928 (0.29)
No. of Observations	51,022	26,388	24,634

Source: 1997 Household Labor Force Survey. Authors' computation.

Notes: Standard deviations are given in the paranthesis; a: indicates dummy variables.

- The proportion of male non-graduates at 8 percent is significantly lower than female non-graduates;
- Primary school graduates constitute the largest educational category at 53 percent;
- About 52 percent of females and 54 percent of males have primary schooling and no more;
- The proportion of those in higher educational categories range between 3-9 percent for females and 6-15 percent for males. Males have notably higher educational attainments than females; and
- About 71-72 percent of the sample live in urban areas which are locations with more than 20 thousand population.

1.4. Organization of the Paper

This paper, at first, provides an overview of the Turkish employment status as well as the experience of OECD (particularly US and Japan) countries in school-to-work transition. Then, it explores the way in which vocational secondary/university graduates and their employment are interrelated, followed by assessment of the current apprenticeship training system in Turkey. Finally, this study concludes the limitations and policy recommendations.

2. Literature Review

2.1. Background of Employment in Turkey

According to the 1997 Household Labor Force Survey (HLFS), in Turkey, the labor force participation rate among individuals who completed formal education is estimated at 51.6 percent. The percentage of those who completed primary education is 49.7 and the rate increases consecutively for each level of education - 66.8 percent of vocational secondary graduates and 81.4 percent of university graduates participated in the labor force. When the labor force participation rate is examined by geographical location, we can see that there is a disparity between urban and rural areas - the rates for those who completed formal education in the urban and rural areas are 40.4 and 59.6 percent, respectively. The rate among individuals who completed vocational secondary education in the urban area is 47.9 percent compared

to 57.4 percent in the rural area. Among university graduates, the labor participation rates are 80.9 and 84.5 percent in urban and rural areas, respectively. If the participation rate is examined by gender, the rate for females at 24.3 percent is significantly lower than that for males at 73.9 percent. However, the gap decreases by the level of education females obtain - among university graduates, the female participation rate is 72.4 percent compared to 86.5 percent for males.

The findings from the 1997 HLFS also show the larbor participation rates for people who received adult education. The rate for those who received apprenticeship and assistant master/master training is 86.5 percent while those who received vocational training courses is 59.9 percent. The rate for males who received apprenticeship is 88.2 percent while the rate for female is 71.8 percent. The rate for males who attended vocational training courses is 86.3 percent while the rate for females is 41.9 percent.

2.2. Experience in OECD Countries

In many OECD countries, the transition from education to the labor market is a main concern because it has implications for unemployment. OECD (1998) reports widely varying unemployment rates among the OECD countries. For instance, in countries with long-standing and highly developed apprenticeship systems such as Germany, Luxembourg, Austria and Denmark, over three-quarters of youth aged 16-24 years in 1996 were in employment one year after leaving education, whereas less than one-third had a job in Finland and Italy where apprenticeship systems are not as well developed. In this study we examine two case studies in OECD countries, namely, those of the United States and Japan, focusing on the nature and extent to which they were able to resolve issues related to school-to-work transition.

United States

In the United States, traditional vocational education has been criticized for not providing a sufficient theoretical foundation for graduates to continue learning and adapting throughout their working lives. On the other hand, pure academic education seems irrelevant to many students (Stern, 1999). Stern (1999) insists that combining the two may improve students' academic performance and develop work-related

capacities at the same time. Further, Stern (1999) reports that apprentice students in the United States perform better in high school and as a result, they are more successful in the labor market after graduation.

In the United States, traditionally, a large number of courses in vocational education is acquired both by upper secondary school students who plan to work after graduation and by those planning to continue their education. Meyer and Horh (1990) found that a majority of those who complete their formal education with graduation from secondary schools do not obtain jobs that are directly related to their vocational training. This phenomenon, they concurred, can be explained by the following factors: a) inability to find a job related to training; b) diversified course work (a portion of the students' training is bound to be unrelated to subsequent work); c) supply and demand imbalance; and d) a low incidence of jobs requiring occupational skills. In order to make the transition smoothly, Meyer and Horn (1990) suggest that occupationally specific training with aggressive job placement should be available to those students who are ready to commit to specific areas of skills such as construction and health. At the same time, broad occupational training should also be made available to students as preparation for subsequent occupationally specific training at the secondary levels and as a job-oriented alternative to high school specific occupational training. Among their recommendations is the verity that schools should integrate vocational training in academic coursework, and this should be expanded and further developed to provide high school students with the opportunity to learn academic skills in an alternative and applied context.

Japan

In Japan, youth unemployment is relatively low although the recent economic recession has inadvertently caused an increase in youth unemployment. When we look at the transition from school-to-work in Japan, upper secondary schools play a crucial role in the transition. Mitani (1999) insists that there are semi-formal contracts between specific employers and upper secondary schools as a way to help ensure a smooth transition for high school graduates. In this contract, each school would recommend a list of students to prospective employers and the list is hardly ever rejected. To receive recommendation from teachers, students need to have

outstanding academic achievement and this motivates students to regulate their school performance and work diligently. Academic achievement is also important in vocational secondary schools where approximately two-third of the classes taught are not vocational but academic. It should be noted that the placement practices of schools and informal relationships between schools and specific firms not only induce students to sustain their performance in difficult academic coursework but they also contribute to the efficiency of the transition from school to work as a whole (Mitani, 1999).

According to Mitani (1999), the Japanese employment system is characterized by efficient human resource development in large companies. Japanese firms tend to hire new school leavers on the basis of their trainability rather than their acquired qualifications. In the case of new secondary school leavers, they are first filtered by how reputable the school from which they graduated is, followed by their academic achievement in subjects such as mathematics and foreign language. Similarly, new university leavers in social sciences follow the initial filtering before the results of their interviews are analyzed. Thus, Mitani (1999) concludes that the criterion of the employment selection is trainability rather than special knowledge or skills in Japan.

3. Vocational Secondary/Higher Education Graduates and Employment Opportunities in Turkey

According to findings from the 1997 HLFS, the following describes the composition of employed individuals with university degrees in Turkey:

- 83.3 percent are working at a job directly or partially related to their education;
- 66.1 percent of those working at a job related to their education are in science, technical, professional workers (the occupational group with the highest rate);
- 0.2 percent of them are in agriculture, animal, husbandary and forestry, and fishery and hunting (the occupational group with the lowest rate);
- 58.9 percent of those working at a job related to their education are in commuity, social and personal services;
- 41 percent are employed at a job not related to their education;

- 25.7 percent of those who could not find a job related to their education and 50 percent of those who think their education is not efficient are working in community, social and personal services; and
- 48 percent who are not working at a job related to their education due to continuing family occupation are working in sales.

3.1. Methodology

In this study, it was hypothesized that education and training would positively affect employment. To the extent that education and training produce a focus on the type of work associated with the level of education and training, chi-square statistics was used to assess whether vocational secondary school and university graduates obtain jobs that are directly related to their education and training. In addition, the study examines the level of correlations among the variables of interest. Finally, logistic regression analysis was used to determine whether grade level, controlling for gender, marital status, and age, contributes to better job performance. The formula below is an illustration of the logistic regression model with outcome and predictor variables.

Model

$$Y = \alpha_0 + \alpha_1 Education + \alpha_2 Gender + \alpha_3 Re latedness + \alpha_4 Aquisition + \alpha_5 Re asons + \alpha_6 MaritalStatus + \alpha_7 Age + \varepsilon$$

Y, which is operationalized by the contribution of education to better job performance, is the dependent variable. The independent variables in the model are grade level, gender, relatedness of educational department to present job, acquisition of occupational skills, reasons for not working at a job related to education, marital status and age (refer to the Appendix for further explanation).

Hypotheses

The hypotheses of the study are as follow:

- As education level increases, the probability that graduates' educational

department is related to their current job also increases.

- As education level increases, the probability that contribution of education to better job performance also increases.
- As education level increases, the probability that graduates cannot find a related job decreases.
- As education level increases, the probability that graduates rely on formal education for the acquisition of skills also increases.
- Education level, controlling for gender, marital status, and age significantly predicts contribution of education to better job performance.

3.2. Results

It was proposed that as grade level increases, the probability that graduates' educational department is related to their current job also increases. In a chi-square test of independence comparing grade level and relatedness of educational department to present job by gender, this hypothesis was supported. Table 2 shows the

Table 2. Distribution of vocational secondary school and university graduates according to relatedness of educational department to present job, Turkey, 1997 (N=3,334)

Gender	Relatedness of educational department to present job	Vocational secondary graduates	University or higher education graduates	All graduates
Male	Yes	453 (43.3%)	921 (67.8%)	1,374 (57.2%)
	Partially	153 (14.7%)	192 (14.1%)	345 (14.4%)
	No	439 (42.0%)	246 (18.1%)	685 (28.4%)
All males		1,045 (100.0%)	1,359 (100.0%)	2,404 (100.0%)
Female	Yes	143 (52.4%)	501 (76.3%)	644 (69.2%)
	Partially	34 (12.4%)	79 (12.0%)	113 (12.2%)
	No	96 (35.2%)	77 (11.7%)	173 (18.6%)
All females		273 (100.0%)	657 (100.0%)	930 (100.0%)
Total (both Male and Female)	Yes	596 (45.2%)	1,422 (70.5%)	2,018 (60.6%)
	Partially	187 (14.2%)	271 (13.4%)	458 (13.7%)
	No	535 (40.6%)	323 (16.1%)	858 (25.7%)
TOTAL		1,318 (100.0%)	2,016 (100.0%)	3,334 (100.0)

Source: 1997 Household Labor Force Survey. Authors' computation.

Males: Pearson chi-square=180.26 (degrees of freedom=2; $p<.001$)

Females: Pearson chi-square=72.89 (degrees of freedom=2; $p<.001$)

distribution of male and female vocational school and university graduates according to whether they thought the department in which they had pursued their studies related to their present job. About 74 percent of vocational secondary school and university graduates believed that their current jobs were either directly or partially related to the educational department from which they had graduated. The incidence is much higher among university graduates (84 percent) compared to vocational school graduates (60 percent) for both males and females. When we review this by gender, about 81 percent of female vocational school and university graduates believed that their current jobs were either directly or partially related to what they have studied compared to 72 percent of their male counterparts. Among university graduates, nearly 90 percent of females versus 82 percent of males thought that their jobs were related to what they have studied. Similarly, among vocational school graduates, 65 percent of females and 58 percent of males thought that their jobs were related to their educational department. The conclusion from the chi-square test is that there is a significant association between education level and relatedness of educational department to present job for male (Pearson chi-square = 180.26 with 2 degrees of freedom and p value < 0.001) and female graduates (Pearson chi-square = 72.89 with 2 degrees of freedom and p value < 0.001). Thus, the higher the level of education, the higher the probability that one believes that the educational department that he or she graduated from is related to his or her current job.

It was proposed that as education level increases, the probability that contribution of education to better job performance also increases. In a chi-square test of independence comparing education level and contribution of education to better job performance by gender, this hypothesis was supported. Table 3 shows the distribution of male and female vocational secondary school and university graduates according to whether they thought their education helped them do their job better.

Nearly 90 percent of university graduates believed that their education contributed to better job performance while only 64 percent of vocational school graduates felt the same way. This level of satisfaction is higher among female vocational secondary school and university graduates (86 percent) compared to male vocational secondary school and university graduates (76 percent). About 79 percent of vocational school

Table 3. Distribution of vocational secondary school and university graduates according to contribution of education to better job performance, Turkey, 1997 (N=3,334)

Gender	Contribution of education to better job performance	Vocational schools graduates	University or higher education graduates	All graduates
Male	Yes	484 (46.3%)	961 (70.7%)	1,445 (60.1%)
	Partially	162 (15.5%)	213 (15.7%)	375 (15.6%)
	No	399 (38.2%)	185 (13.6%)	584 (24.3%)
All males		1,045 (100.0%)	1,359 (100.0%)	2,404 (100.0%)
Female	Yes	151 (55.3%)	522 (79.4%)	673 (72.4%)
	Partially	42 (15.4%)	82 (12.5%)	124 (13.3%)
	No	80 (29.3%)	53 (8.1%)	133 (14.3%)
All females		273 (100.0%)	657 (100.0%)	930 (100.0%)
Total (both Male and Female)	Yes	635 (48.2%)	1,483 (73.6%)	2,118 (63.5%)
	Partially	204 (15.5%)	295 (14.6%)	499 (15.0%)
	No	479 (36.3%)	238 (11.8%)	717 (21.5%)
TOTAL		1,318 (100.0%)	2,016 (100.0%)	3,334 (100.0%)

Source: 1997 Household Labor Force Survey. Authors' computation.

Males: Pearson chi-square=205.30 (degrees of freedom=2; p<.001)

Females: Pearson chi-square=77.57 (degrees of freedom=2; p<.001)

and university graduates believed that their education either directly or partially contributed to better job performance. The incidence is much higher among university graduates (88 percent) compared to vocational school graduates (64 percent) for both males and females. When we review this by gender, about 86 percent of female vocational school and university graduates believed that their education either directly or partially helped them perform better in their job compared to 76 percent of their male counterparts. Among university graduates, nearly 92 percent of females versus 86 percent of males thought that their education helped them do a better job. Similarly, among vocational school graduates, 70 percent females and 62 percent males had the same belief.

The conclusion from the chi-square test is that there is a significant association between grade level and contribution of education to better job performance for male (Pearson chi-square = 205.30 with 2 degrees of freedom and p value < 0.001) and female graduates (Pearson chi-square = 77.57 with 2 degrees of freedom and p value < 0.001). Thus, the higher the level of education, the higher the probability that one thinks that one's education contributes to one's job performance.

In this study, we want to examine whether vocational secondary school and university graduates were able to find jobs related to their education. It was proposed that as education level increases, the probability that graduates cannot find a related job decreases. In other words, as education level decreases, the probability that graduates cannot find a related job increases. In a chi-square test of independence comparing grade level and reasons why male and female graduates are not working at jobs related to their education, this hypothesis was supported. Table 4 shows the distribution of male and female vocational secondary school and university graduates according to their reasons for not working at a job related to their education.

Overall, 48 percent of male and 58 percent of female vocational secondary school and university graduates claimed that they could not find jobs related to their education. Among male adults, 54 percent of vocational school graduates could not find related jobs compared to approximately 40 percent of university graduates. Conversely, nearly 70 percent of female vocational school graduates reported that they were not able to find a job related to their education compared to 44 percent of female

Table 4. Distribution of vocational school and university graduates according to reason for not working at a job related to education, Turkey, 1997 (N=858)

Gender	Reason for not working at a job related to education	Vocational secondary or high school graduates	University or higher education graduates	All graduates
Male	Couldn't find related job	235 (53.5%)	95 (38.6%)	330 (48.2%)
	Not interested in subject	40 (9.1%)	27 (11.0%)	67 (9.8%)
	Education was not sufficient	17 (3.9%)	5 (2.0%)	22 (3.2%)
	To continue family occupation	49 (11.2%)	28 (11.4%)	77 (11.2%)
	Insufficient income	25 (5.7%)	25 (10.2%)	50 (7.3%)
	Unsuitable working condition	26 (5.9%)	22 (8.9%)	48 (7%)
	Changed job	23 (5.2%)	17 (6.9%)	40 (5.8%)
	Other	24 (5.5%)	27 (11.0%)	51 (7.4%)
All males		439 (100.0%)	246 (100.0%)	685 (100.0%)
Female	Couldn't find related job	66 (68.8%)	34 (44.2%)	100 (57.8%)
	Not interested in subject	13 (13.5%)	10 (13.0%)	23 (13.3%)
	Education was not sufficient	3 (3.1%)	6 (7.8%)	9 (5.2%)
	To continue family occupation	3 (3.1%)	3 (3.9%)	6 (3.5%)
	Insufficient income	0 (0%)	4 (5.3%)	4 (2.3%)
	Unsuitable working condition	5 (5.2%)	7 (9.0%)	12 (6.9%)
	Changed job	1 (1.0%)	7 (9.0%)	8 (4.6%)
	Other	5 (5.3%)	6 (7.8%)	11 (6.4%)
All females		96 (100.0%)	77 (100.0%)	173 (100.0%)

Source: 1997 Household Labor Force Survey. Authors' computation

Males: Pearson chi-square=187.32 (degrees of freedom=7; p<.001)

Females: Pearson chi-square=92.28 (degrees of freedom=7; p<.001)

university graduates.

The conclusion from the chi-square test is that there is a significant association between education level and ability to find a job related to one's education for male (Pearson chi-square = 187.32 with 7 degrees of freedom and p value < 0.001) and female graduates (Pearson chi-square = 92.28 with 7 degrees of freedom and p value < 0.001). Thus, the higher the level of education, the lower the probability that one cannot find a related job, and vice versa.

One of the undertakings in our study is to investigate where vocational secondary school graduates and university graduates acquired their occupational skills. It was proposed that as grade level increases, the probability that graduates rely on formal education for the acquisition of occupational skills also increases. In a chi-square test of independence comparing grade level and acquisition of occupational skills, this hypothesis was supported. Table 5 shows the distribution of male and female vocational school and university graduates according to where they had acquired the skills for their job.

Not surprisingly, about 70 percent of university graduates reported that they had acquired their occupational skills in a university, whereas 40 percent of vocational secondary school graduates reported that they had acquired their occupational skills in vocational schools. As indicated, on-the-job training seems to play a critical role. While 50 percent of male and 44 percent of female vocational school graduates reported that they had acquired their occupational skills through on-the-job training, the departure for university graduates is greater with 23 percent of males and 20 percent of females making the same claim. Consequently, vocational school graduates tend to rely more on on-the-job training compared with university graduates.

The conclusion from the chi-square test is that there is a significant association between grade level and reliance on formal education for the acquisition of occupational skills for male (Pearson chi-square = 1293.56 with 8 degrees of freedom and p value < 0.001) and female graduates (Pearson chi-square = 527.76 with 8 degrees of freedom and p value < 0.001). Thus, the higher the level of education, the higher the probability that graduates rely on formal education for the acquisition of occupational skills.

Table 5. Distribution of vocational school and university graduates according to where they acquired their occupational skills, Turkey, 1997 (N=3,334)

Gender	Acquisition of occupational skills	Vocational secondary or high school graduates	University or higher education graduates	All graduates
Male	Vocational school	407 (38.9%)	45 (3.3%)	452 (18.8%)
	University or higher education	0 (0%)	940 (69.2%)	940 (39.1%)
	Apprenticeship school	9 (0.1%)	1 (0.1%)	10 (0.4%)
	On the job	518 (49.6%)	318 (23.4%)	836 (34.8%)
	Interior service education	26 (3.2%)	20 (1.5%)	46 (1.9%)
	Vocational course	16 (1.5%)	2 (0.1%)	18 (0.7%)
	Foreman-apprentice relation	12 (1.1%)	1 (0.1%)	13 (0.5%)
	Family	55 (5.5%)	30 (2.2%)	85 (3.6%)
	Other	2 (0.1%)	2 (0.1%)	4 (0.2%)
All males		1,045 (100.0%)	1,359 (100.0%)	2,404 (100.0%)
Female	Vocational school	132 (48.4%)	15 (2.3%)	147 (15.8%)
	University or higher education	0 (0%)	497 (75.6%)	497 (53.4%)
	Apprenticeship school	0 (0%)	0 (0%)	0 (0%)
	On the job	120 (44.0%)	129 (19.7%)	249 (26.8%)
	Interior service education	6 (2.2%)	9 (1.4%)	15 (1.6%)
	Vocational course	5 (1.8%)	3 (0.4%)	8 (1.0%)
	Foreman-apprentice relation	0 (0%)	0 (0%)	0 (0%)
	Family	9 (3.3%)	2 (0.3%)	11 (1.1%)
	Other	1 (0.3%)	2 (0.3%)	3 (0.3%)
All females		273 (100.0%)	657 (100.0%)	930 (100.0%)

Source: 1997 Household Labor Force Survey. Authors' computation.

Males: Pearson chi-square=1293.56 (degrees of freedom=8; p<.001)

Females: Pearson chi-square=527.76 (degrees of freedom=8; p<.001)

Vocational Secondary Schools by Type

This section examines the differential links between education and employment for type of vocational program.

Here we are trying to find out if there is an association between the type of vocational secondary school that graduates enroll in and whether they believe that their field of study is related to their present job. In a chi-square test of independence we find that there is a significant association between type of vocational secondary school and relatedness of educational department to present job by gender (male: Pearson chi-square = 16929.68 with 27 degrees of freedom and p value < 0.001; female: Pearson chi-square = 4747.81 with 27 degrees of freedom and p value < 0.001). Table 6 shows the distribution of male and female graduates from different vocational

schools according to whether they thought that their education was related to their current job.

More graduates believed that their education was related to their current job, with 58.0 percent of males and 64.8 percent of females. This level of belief is higher among female from technical school (60.2 percent) compared to their male counterparts (55.4 percent). About 60.6 percent commercial/tourism school believed that their education either directly or partially contributed to better job performance. The incidence is much higher among graduates from health school (94.6 percent) compared to graduates from technical school (56.1 percent) for both males and females. When we review this by gender, about 94.7 percent of females from health vocational school believed that their education either directly or partially was related to their present job compared to 88.2 percent of their male counterparts. Among religious school, nearly 35 percent of females versus 40 percent of males thought that their education was related to their present job. Nearly 90 percent of males from military/police school believed that their education was directly related to their

Table 6. Distribution of graduates from different vocational school types according to relatedness of educational department to present job, Turkey, 1997 (N=1,318)

Types of School	Males			Females			Total		
	Yes	Partially	No	Yes	Partially	No	Yes	Partially	No
Religious	16 (26.7%)	8 (13.3%)	36 (60.0%)	1 (16.7%)	1 (16.7%)	4 (66.6%)	17 (25.8%)	9 (13.6%)	40 (60.6%)
Technical	233 (39.1%)	97 (16.3%)	266 (44.6%)	53 (46.9%)	15 (13.3%)	45 (39.8%)	286 (40.3)	112 (15.8%)	311 (43.9%)
Commercial/ Tourism	79 (42.0%)	35 (18.6%)	74 (39.4%)	27 (34.2%)	16 (20.3%)	36 (45.5%)	106 (39.7%)	51 (19.1%)	110 (41.2%)
Military/ Police	59 (88.1%)	-- (0.0%)	8 (11.9%)	- (--%)	- (--%)	- (--%)	59 (88.1%)	-- (0.0%)	8 (11.9%)
Health	15 (88.2%)	1 (5.9%)	1 (5.9%)	53 (93.0%)	1 (1.8%)	3 (5.2%)	68 (91.9%)	2 (2.7%)	4 (5.4%)
Finance	-- (--%)	-- (--%)	-- (--%)	-- (--%)	- (--%)	- (--%)	- (--%)	1 (100.0%)	-- (--%)
Other	51	11	54	9	1	8	60	12	62
Total	453 (43.3%)	153 (14.6%)	439 (42.1%)	143 (52.4%)	34 (12.5%)	96 (35.1%)	596 (45.2%)	187 (14.2%)	535 (40.6%)

Source: 1997 Household Labor Force Survey. Authors' computation.

Males: Pearson chi-square=16929.68 (degrees of freedom=27; p<.001)

Females: Pearson chi-square=4747.81 (degrees of freedom=21; p<.001)

present job.

Next, we examine if there is an association between the type of vocational secondary school that graduates enroll in and whether they believe their education helped them do their job better (see Table 7). Around 60 percent of graduates from technical and commercial/tourism school believed that their education helped them do their job better, while around 90 percent of graduates from military/police and health school believed so. The level of belief is higher among female from technical school (64.6 percent) and commercial/tourism school (68.4 percent) compared to their male counterparts (59.7 percent and 63.8 percent, respectively).

In a chi-square test of independence we find that there is a significant association between type of vocational secondary school and contribution of education to better job performance by gender (male: Pearson chi-square = 17053.27 with 27 degrees of freedom and p value < 0.001; female: Pearson chi-square = 4762.54 with 21 degrees of freedom and p value < 0.001).

Table 7. Distribution of graduates from different vocational school types according to according to contribution of education to better job performance, Turkey, 1997 (N=1,318)

Types of School	Males			Females			Total		
	Yes	Partially	No	Yes	Partially	No	Yes	Partially	No
Religious	15 (25.0%)	7 (11.7%)	38 (63.3%)	1 (16.7%)	1 (16.7%)	4 (66.6%)	16 (24.3%)	8 (12.1%)	42 (63.6%)
Technical	262 (44.0%)	94 (15.8%)	240 (40.3%)	57 (50.4%)	16 (14.2%)	40 (35.4%)	319 (45.0%)	110 (15.5%)	280 (39.5%)
Commercial/ Tourism	84 (44.7%)	36 (19.1%)	68 (36.2%)	32 (40.6%)	22 (27.8%)	25 (31.6%)	116 (43.5%)	58 (21.7%)	93 (34.8%)
Military/ Police	58 (86.6%)	1 (1.5%)	8 (11.9%)	- (--%)	- (--%)	- (--%)	58 (86.6%)	1 (1.5%)	8 (11.9%)
Health	15 (88.2%)	1 (5.9%)	1 (5.9%)	51 (89.4%)	3 (5.3%)	3 (5.3%)	66 (89.2%)	4 (5.4%)	4 (5.4%)
Finance	-- (0.0%)	1 (100.0%)	-- (0.0%)	-- (--%)	- (--%)	- (--%)	- (0.0%)	1 (100.0%)	-- (0.0%)
Other	50 (43.1%)	22 (19.0%)	44 (37.9%)	10 (55.6%)	-- (0.0%)	8 (44.4%)	60 (44.8%)	22 (16.4%)	52 (38.8%)
Total	484 (46.3%)	162 (15.5%)	399 (38.2%)	151 (55.3%)	42 (15.4%)	80 (29.3%)	635 (48.2%)	204 (15.5%)	479 (36.3%)

Source: 1997 Household Labor Force Survey. Authors' computation.

Males: Pearson chi-square=17053.27 (degrees of freedom=27; p<.001)

Females: Pearson chi-square=4762.54 (degrees of freedom=21; p<.001)

Table 8 shows the distribution of male and female graduates from different vocational school types according to their reasons for not working at a job related to their education. About 70 percent of female graduates from technical and commercial school claimed that they could not find jobs related to their education, while around 60 percent of males students from the these vocational schools claimed so.

In a chi-square test of independence we find that there is a significant association between type of vocational secondary school and ability to find a job related to one's education by gender (male: Pearson chi-square = 5649.60 with 72 degrees of freedom and p value < 0.001; female: Pearson chi-square = 1398.00 with 56 degrees of freedom and p value < 0.001).

Table 8. Distribution of graduates from different vocational school types according to reason for not working at a job related to education, Turkey, 1997 (N=535)

Gender	Reason for not working at a job related to education	Religious	Technical	Commercial	Military/ Police	Health	Finance	Others
Male	Couldn't find related job	14	148	45	3	1	--	24
	Not interested in subject	11	16	9	--	--	--	4
	Education was not sufficient	4	9	2	--	--	--	2
	To continue family occupation	1	32	7	--	--	--	9
	Insufficient income	4	14	3	--	--	--	4
	Unsuitable working condition	2	16	3	1	--	--	4
	Changed job	--	20	2	--	--	--	1
	Other	0	11	3	4	--	--	0
All males		36	266	74	8	1	0	54
Female	Couldn't find related job	2	32	26	--	1	--	5
	Not interested in subject	1	6	6	--	--	--	--
	Education was not sufficient	1	--	1	--	--	--	1
	To continue family occupation	--	3	--	--	--	--	--
	Insufficient income	--	--	-	--	--	--	--
	Unsuitable working condition	--	1	1	--	1	--	2
	Changed job	--	--	1	--	0	--	--
	Other	--	3	1	--	1	--	--
All females		4	45	36	0	3	0	8

Source: 1997 Household Labor Force Survey. Authors' computation

Males: Pearson chi-square=5649.60 (degrees of freedom=72; p<.001)

Females: Pearson chi-square=1398.00 (degrees of freedom=56; p<.001)

Logistic Regression

A direct logistic regression analysis was performed on the contribution of education to better job performance as outcome and predictors: education level, gender,

relatedness of educational department to present job, acquisition of occupational skills, reasons for not working at a job related to education, marital status and age. Analysis was performed using SYSTAT LOGIT. After deletion of 640 cases with missing values, data from 2,000 graduates who believed that their education contributed to better performance at their job and 694 graduates who believed otherwise were available for analysis. Missing data appeared to be scattered randomly across categories of outcome and predictors.

A test of full model with all predictors against a constant-only model was statistically reliable. Chi-square (22, N=2,694) = 2665.36, $p < .001$ indicates that the predictors, as a set, reliably distinguished between graduates who believed that their education helped them do their job better and those who did not share this belief. The variance in contribution of education to better job performance accounted for is large, with Cox and Snell R-square = .63. Prediction success was relatively impressive, with 95 percent of those who believed in the contribution of education and 89 percent of those who did not believe correctly predicted, for an overall success rate of 93 percent.

Table 9 shows regression coefficients, Wald statistics, odds ratios for each of the 7 predictors. According to the Wald criterion, only age did not reliably predict the contribution of education towards better job performance. Therefore, contribution of education to better job performance is a function of education level, gender, relatedness of educational department to present job, acquisition of occupational skills, reason for not working at a job related to education, and marital status.

Table 9. Logistic Regression Analysis of the Contribution of Education to Better Job Performance as a Function of Education Level, Gender, Relatedness of Educational Department to Present Job, Acquisition of Occupational Skills, Reason for not Working at a Job Related to Education, Marital Status and Age (N=2694)

Independent Variables	Beta	S.E. B	Wald Test	Odds Ratio
Education Level	0.96*	0.38	6.48	2.60
Gender	-0.71*	0.36	3.90	0.49
Relatedness of Department to Present Job	6.22***	0.57	120.68	502.13
Acquisition of Occupational Skills (vs. Vocational school):				
University or higher education	0.29	0.58	0.24	1.33
Apprenticeship school	0.23	3.53	0.01	1.26
On the job	-1.35**	0.49	7.65	0.26
Interior service education	-1.72	0.97	3.18	0.18
Vocational course	1.04	0.80	1.69	2.82
Foreman-apprentice relation	-5.99	19.29	0.10	0.01
From family	-1.95*	0.92	4.50	0.14
Reasons for not Working at a Job Related to Education (vs. *Couldn't find related job):*				
Not interested in subject	-1.47**	0.55	7.06	0.23
Education was not efficient	0.01	0.60	0.00	1.01
To continue family occupation	-1.77	1.19	2.22	0.17
Insufficient Income	-0.53	0.74	0.50	0.59
Unsuitable working condition	-0.48	0.77	0.38	0.62
Changed job	-1.19	0.77	2.39	0.30
Marital Status (vs. Single):				
Married	-0.26	0.44	0.34	0.77
Divorced	-2.81**	1.07	6.84	0.06
Widowed	-2.06	1.65	1.55	0.13
Age	0.01	0.02	0.02	1.00
(Constant)	-3.53	2.35	2.26	0.03

Source: 1997 Household Labor Force Survey. Authors' computation.

* p<= .05; ** p<= .01; *** p<= .001.

4. The Effect of Apprenticeship Training Programs on Employment Probability

4A. Introduction

The objective of apprenticeship training and course attendance programs is twofold: to enhance the credibility and appeal of participants to potential employers; and to enable participants to establish their own business. These programs serve to improve the human capital of the participants and two consequences can be expected. One consequence is the increase in employers' demand for the participants' labor or the acquisition of the necessary skills for participants to establish their own business, which will increase participants' probability of employment. The second consequence

is the increase in the earnings of the participant. An alternative view point is Thurow's (1975) job competition model, which is based on non-human-capital. According to this model, participation in a training program may be used as a signal by the employers of the individual's motivation or capasity for training. Hence, this model predicts an increase both in the employment probability and the wage rate. The human capital and the job competition models are not mutually exclusive.

The effectiveness of the training program on the probability of employment is examined by Main (1991), Main and Raffe (1983), Main and Shelly (1990) and Denny and Harmon (2000) among others. Pre-and post-training program labor market experience on the part of the participant are used for comparison purposes. The other indicator of the effectiveness of the training programs is the wage effects. This is studied by Ashenfelter (1978), Kiefer (1978) and Bassi (1984) for the U.S. and by Main and Shelly (1990) in Scottland. Such studies involved observations of the wage rate earned by the trainees before and after their participation in the training program.

The lack of suitable data have been the main problem in attempting to evaluate the training programs. The often used research design is a before/after design with control gorup. The HLFS used in this study gathered information about the current labor force status of the respondents and whether or not they have participated in the training programs. The strategy adopted in this study compares the labor market outcomes of a group of individuals who had been on the training program with those of a group of individuals who had not been on a training program.

4B. Apprenticeship Training System in Turkey

The first apprenticeship program in Turkey dates back to 1977. Apprenticeship training was introduced for the first time with the Law no 2089 enacted in 1977. In 1986, Law no 3308 was enacted and titled 'Apprenticeship and Vocational Education Law,' which was subsequently amended in 1997 and 2001. Formal apprenticeship and non-formal vocational and technical training are regulated under this law. While the Ministry of Education is the responsible body for carrying out the stipulations of the law, the Turkish Confederation of Trades and Craftsmen is the organization responsible for carrying out similar activities in some of the occupations not covered

by the Ministry of Education. The share in GNP and the Ministry of Education's budget of the resources allocated to apprenticeship and non-formal education are given in Table 10. A significant decline is observed overtime in these shares.

Table 10. Share in GNP and Ministry of Education (MoE) Budget of the Resources allocated to Apprenticeship and Non-Formal Education (Percent), Turkey, 1991-2000

	Share in GNP	Share in MoNE Budget
1991	0.10	3.68
1992	0.14	4.55
1993	0.15	4.82
1994	0.10	4.17
1995	0.07	3.39
1996	0.07	3.44
1997	0.07	2.92
1998	0.06	2.36
1999	0.07	2.31
2000	0.07	2.41

Source: Ministry of Finance: MoE, Definite Accounts as reported by Tunal (2003).

Apprenticeship training, which consists of theoretical and practical training, is undertaken by the young who work at enterprises with the goal of learning a vocation. The individuals must be at least 14 years old and completed compulsory education.[1] Individuals under 19 years of age must sign an apprenticeship agreement with the employer in order to work at such an enterprise.

There are four stages in apprenticeship training, namely, candidate apprenticeship, apprenticeship, journeymanship and mastership. Individuals under 14 years of age and have completed their compulsory basic education are considered candidate apprentices. Candidate apprentices and apprentices have the student status and are not counted among the personnel at a workplace. Apprenticeship training takes between 2 and 4 years depending on the type of profession. The first three months is a period of probation during which wages have to be paid. Workers less than 16 years of age receive about 85 percent of the minimum wage for older workers. Employers pay at least 30 percent of the minimum wage. Insurance is provided against work accidents and illnesses where the premiums are paid by the state.

Enterprises have the responsibility of providing practical training to the candidate

apprentices and the apprentices. Vocational Training Centers give theoretical training and further practical training. Supra Training Centers are organized and run by the Turkish Confederation of Trades and Craftsmen and have similar functions as the Vocational Training Centers.

At the end of apprenticeship period, candidates take the journeymenship examination, which covers both theoretical and practical knowledge. Successful candidates earn a journeymenship certificate. Journeymanship training is instituted at Vocational Training Centers outside working hours for a period of three years. At the end of this training, journeyman may take the mastership examination in order to earn a mastership certificate. This examination can also be taken by those who have worked for at least five years in their profession and by those who graduated from a vocational or technical high school. The masters can also take pedagogy courses at the Vocational Training Centers, and thereafter conduct their own training for candidate apprentices and apprentices.

4.1. Methodology

In order to estimate the impact of training program experience on employment probability, a probit model (Maddala, 1983) is employed. The likelihood of an individual being in employment can be summarized by an unobserved index P* as a function of individual's characteristics and circumstances:

$$P_i^* = u^i x_i + u_i$$

Where x is a vector of variables describing the individual's characteristics and circumstances. u is a vector of unknown parameters, and u is a random variable including unmeasured characteristics.

The observed counterpart of P* is y which indicates whether or not an individual is in employment at the time of the survey, ($y_i = 1$) or not ($y_i = 0$). y can be expressed in terms of whether the value of the unobserved variable P* exceeds a certain critical value say zero:

$$\text{Prob.}(y_i = 1) = \text{Prob.}(P^* > 0) = P(u_i > -u^i x_i) \qquad (2)$$

Assuming that u is normally distributed with mean zero and variance s^2 we let F and f denote the cumulative and the probability density functions.

$$P(y_i = 1) = F(u^i x_i)$$

Assuming that there are n individuals, the likelihood of observing those individuals at the survey time in employment or not in employment is given by:

$$L(u) = \prod_{y=1} [F(u^i x_i)] \prod_{y=0} [1 - F(u^i x_i)]$$

Maximizing the likelihood function will give the Maximum Likelihood Estimates (MLE) of *u*.

The variables included in the vector x are the following. The experience variable is represented by a linear and a quadratic term to capture the nonlinearity in the employment profile. Experience is computed as age minus the number of years of schooling minus 6, which is the age of entry into school (Mincer, 1974). In order to examine the differential impact of the type of schooling, six levels of schooling are distinguished including general and vocational curricula at the high school level. Illiterates and those who are literate without a diploma are combined to form the category of non-graduates. The other categories are: primary school graduates, middle school graduates, general high school graduates, vocational high school graduates, and finally, the university graduates. These levels are represented by dummy variables where the base category is non-graduates. The experience and education coefficients are expected to be positive and the quadratic experience term coefficient is expected to be negative.

A dummy variable is included indicating whether the individual is a female. Another dummy variable indicates whether the individual lives in urban locations, which are defined as locations with population more than 20 thousand people. Two dummy variables are important for this study and they indicate whether the individual had prior experience in apprenticeship and course training. Dummy variables for regions of residence are included to allow for differences in labor market

opportunities such as local market wages, prices and unemployment rates.

Data

The October 1997 HLFS has a special section called "Education and Training Supplementary Questionnaire" which was implemented once only in October 1997. This section elicited information on formal and adult education of the population. The questions that are of importance for this study are number 52b and 89, which inquire into the extent of apprenticeship to employed and unemployed or nonparticipating individuals. Specially, number 52b probes whether employed individuals have taken or currently attending any apprenticeship, journeymanship and master training to learn their occupation while number 89 asks the same to unemployed or nonparticipant individuals.

With these questions we have identified those people who have taken apprenticeship, journeymanship or mastership training and we have excluded those who are currently attending such training. This is shown in Table 1 under "Apprenticeship" and we will refer to this training for short "apprenticeship". The figures indicate that about 0.61 percent of the total sample have taken apprenticeship training, with 0.15 percent for females and 1.10 percent for males. The proportion of males who have taken apprenticeship is much larger than that of females because most of the training fields for apprenticeship are usually considered male occupations. Months of apprenticeship refer to the duration of apprenticeship training.

The second question is about course attendence. Question number 65 elicits a response from those who are in employment and question number 100 elicits a response from those who are unemployed or nonparticipant. These questions ask "Have you taken or are you attending now any vocational training courses to learn or improve your occupation?". The examples of such courses are as follows: Computer, typing, tourism, hand made flower, carpet weaving, tinned food, beekeeping, accounting, and training on the job. The response to these questions assisted us in identifying people who have taken such courses and we have excluded those who are currently attending such courses. This is shown in Table 1 under "course training". The figures indicate that about 4.1 percent of the total sample have taken course

training, with 4.9 percent for females and 3.3 percent for males. We note that proportion of females who have taken course training is larger than that of males. Further we note that in the sample, the proportion of those who have taken course training is much larger than those who have taken apprenticeship training. This seems to imply that course training is much more widespread than apprenticeship training.

4.2. Results

This section presents the empirical results for the choice of the employment status. Table 11 displays the maximum likelihood estimate of a probit for employment for the

Table 11. Maximum Likelihood Probit Estimates of Employment Status, Turkey, 1997

	Marginal Effects (t-ratios)			
Variables	Total	Total	Female	Male
Experience	0.0367 (63.8)	0.0368 (64.0)	0.0053 (10.0)	0.0554 (75.6)
Experience Square	-0.0007 (60.5)	-0.0007 (60.6)	-0.0001 (10.7)	-0.0010 (72.3)
Education[a]:				
Primary	0.0302 (3.58)	0.0302 (3.58)	0.0134 (1.80)	0.0647 (5.01)
Middle	-0.0038 (0.33)	-0.0028 (0.24)	-0.0083 (0.72)	-0.1091 (6.49)
High School	0.1697 (13.2)	0.1624 (13.3)	0.1913 (12.0)	-0.0322 (1.88)
Voc. High	0.2647 (18.6)	0.2662 (18.8)	0.3187 (14.4)	0.0409 (2.30)
University	0.4504 (43.5)	0.4514 (43.7)	0.6508 (42.9)	0.0842 (5.05)
Urban[a]	-0.2773 (46.7)	-0.2778 (46.8)	-0.2892 (41.8)	-0.1468 (21.4)
Female[a]	-0.5117 (115)	-0.5111 (115)	-	-
Apprenticeship[a]	0.2213 (6.76)	0.0510 (1.24)	0.4038 (5.03)	0.0801 (2.89)
Course Training[a]	0.0550 (4.17)	0.0545 (4.13)	0.0228 (2.00)	0.0540 (3.04)
Months of Appr.	-	0.0092 (6.69)	-	-
Regions[a]:				
Aegean	-0.0213 (2.66)	-0.0218 (2.72)	0.0166 (2.17)	-0.0676 (6.10)
Mediterranean	-0.0883 (10.7)	-0.0889 (10.7)	-0.0754 (11.7)	-0.0616 (5.28)
Central Anatolia	-0.1164 (15.9)	-0.1172 (16.7)	-0.0854 (14.9)	-0.0946 (9.00)
Black Sea	0.0033 (0.35)	0.0027 (0.30)	0.0310 (3.49)	-0.0472 (3.71)	
East Anatolia	-0.0486 (4.60)	-0.0485 (4.59)	-0.0484 (5.89)	-0.0158 (1.09)
Southeast A.	-0.0034 (0.34)	-0.0032 (0.33)	-0.0300 (3.47)	0.0260 (2.15)
-Log Likelihood	24,231	24,205	10,801	11,647
Chi Square (K)	20,584	20,637	4,260	7,832
Pseudo R-Square	0.2981	0.2989	0.1647	0.2516
No. of Observations	50,633	50,633	26,124	24,509

Source: 1997 Household Labor Force Survey. Authors' computation.

Notes: a: indicates dummy variables.

The table gives the marginal effects. The marginal effects for the dummy variables is for the discrete change of the dummy variable from 0 to 1. The associated asymptotic t-ratios are given in the parantheses.

K is the number of independent variables.

female, male and total samples. The implied marginal effect of each variable on the probability of being in employment evaluated at the mean values of the variables are provided in this table. The results indicate that years of experience entered into the probit for employment equation with highly significant linear and quadratic terms. An additional year of experience increases the probability of being in employment by about 0.69 percent in the total sample and by 0.09 and 1.41 percent in the female and male samples, respectively. The probability of being in employment peaks at age 26, 27 and 28 in the total, female and male samples respectively. The education variables are jointly significant in all samples although middle school coeffecients are insignificant in the total and female samples and have a negative sign in the male sample. The base category is non-graduates, which consists of those who are illiterate or literate but without a diploma. A primary school graduate has about three percent higher probability of being in employment as compared to a non-graduate while the same probabilities are 16, 27 and 45 percent, respectively, for the high school, vocational high school and university graduates. In other words, a vocational high school graduate is more likely to be in employment than a general high school graduate. In the female sample, a primary school graduate has about one percent higher probability of being in employment as compared to a non-graduate while the same probabilities are 19, 31 and 65 percent, respectively, for the general high school, vocational high school and university graduates. In the male sample, a vocational high school graduate has about 4 percent and a university graduate has about 8 percent higher probability of being in employment as compared to a non graduate.

The marginal effect of residing in an urban location is to lower the probability of being in employment in the total, female and male samples. Conversely urban locations increase the probability of being in unemployment. These results are in concordance with the observations that employment rates are higher in the rural areas than in urban areas. The female dummy variable indicates that the marginal effect of being female is to significantly lower the probability of being in employment. The likelihood function is used to test the null hypothesis that the probability of employment is determined in the same manner in both the female and the male samples. The resulting Chi-square test statistic exceeded the critical value at five

percent level of significance. Thus, the hypothesis of equal coefficients is rejected suggesting that the probability of employment of females and males should be modelled separately.

Apprenticeship training has positive and statistically significant marginal effects in the total, female and male samples. Apprenticeship training increases the probability of employment by about 22 percent in the total sample, while the same probabilities are 40 and 8 percent, respectively, in the female and male samples. The 8 percent increase in the employment probability in the male sample is rather low. The marginal effects of course training is much lower than the marginal effects of apprenticeship training. These marginal effects are also positive and statistically significant. Course training increases employment probability by about 5.5 percent in the total sample while the same probabilities are 2.3 and 5.4 percent in the female and male samples, respectively.

The dummy variables for the regions of residence are included to allow for local differences in labor markets, unemployment rates, wages and prices. The estimated marginal effects are jointly significant at the one percent level. In the total sample, living in all regions statistically significantly reduce the probability of employment as compared to living in Marmara except in the Black Sea and Southeast Anatolia regions where the estimated marginal effects are insignificant. In the female sample, living in all regions statistically significantly reduce the probability of employment as compared to Marmara except in the Black Sea which increases the probability of female employment as compared to Marmara. In the male sample, living in all regions statistically significantly reduce the probability of male employment as compared to Marmara except in the Southeast Anatolia which increases the probability of employment as compared to Marmara and East Anatolia is statistically not different from Marmara in terms of employment probability.

5. Conclusion and Policy Recommendations

This paper considered two main issues in the link between education/training and the labor market in Turkey. The first pertains to the question of whether secondary school and university graduates are able to obtain jobs that are directly related to their education, and whether level of education contributes to better performance.

The second issue relates to whether apprenticeship training and course training programs have a positive impact on employment.

Our findings show that it is less likely for graduates from secondary vocational education in comparison with university graduates to find a job that is directly related to what they have learned in school. Additionally, in terms of job performance, it is more likely for the latter than the former that their education has helped them in their work. It is not surprising, therefore, that our study shows a greater reliance on on-the-job training for secondary vocational graduates than university graduates. The reason for this discrepancy is probably due to the fact that the skills required in the labor market are not being taught at the secondary vocational school level. At the same time, secondary vocational schools are not providing high quality education to meet the demand in the labor market.

In order to examine whether apprenticeship training and course training programs have a positive impact on employment, probit models of employment are estimated for the total, female and male samples. Apprenticeship training program is found to increase the probability of employment by about 22, 40 and 8 percent in the total, female and male samples, respectively. Course training program is found to increase the probability of employment by about 6, 2 and 5 percents in the total, female and male samples, respectively. All of these effects were statistically significant. Therefore, we can conclude that government intervention in the labor market through programs such as apprenticeship training and course training seem to increase employment probabilities of both females and males in a significant way. However, this success in increasing the employment probability of the participants must be appraised against the cost. There is no study on the cost aspect of these programs. Further, increased probability of employment is not the only beneficial outcome of participation in the training programs. An important impact is to improve the wage possibilities of the participants. Data must be collected on wages to study this aspect of the training programs.

In terms of policy development, several implications follow from the foregoing results. Ensuring that all graduates benefit from their education is a clear priority - we suggest that the government promote on-the-job training/apprenticeship program to students, especially at the secondary school level, and develop such a system

between schools and prospective employers to further hone the skills of potential job candidates. Futhermore, areas such as relevance of curriculum and teaching (in terms of quality measure) should be reviewed, specifically in alignment with the labor market's demand. Experience learned from OECD countries such as United States and Japan may be useful and applicable to Turkish vocational secondary schooling. Vocational secondary schools in Turkey may need to integrate vocational training in academic coursework to provide students with the opportunity to learn academic skills in an alternative, applied context. In this way, vocational secondary students will be able to cope and compete in the contemporary labor market as they adjust their skills to suit its changing needs.

Notes

1 Before the August 1997 educational reform they must be at least 12 years old and completed the compulsory education of five years. The educational reform extended the compulsory education from five to eight years covering the middle schools.

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Appendix

A direct logistic regression analysis was performed on the contribution of education to better job performance as outcome and predictors: grade level, gender, relatedness of educational department to present job, acquisition of occupational skills, reasons for not working at a job related to education, marital status and age.

Model

$$Y = \alpha_0 + \alpha_1 Education + \alpha_2 Gender + \alpha_3 Re\ latedness + \alpha_4 Aquisition + \alpha_5 Re\ asons + \alpha_6 MaritalStatus + \alpha_7 Age + \varepsilon$$

Dependent variable: Y

Contribution of education to better job performance
Question 50. Did your education taken in educational institution help you to do your job better? (Dummy variable - No (0) vs. Yes/Partially)

Independent variables: X

Education
Question 42. What is the latest school you graduated from? (Dummy variable - Vocational school (0) vs. University or higher education)

Gender
Question 3. Sex? (Dummy variable - Female (0) vs. Male)

Relatedness of educational department to present job
Question 48. Is the department you have graduated from educational institution related to your present job? (Dummy variable - No (0) vs. Yes)

Acquisition of occupational skills

Question 41. Where did you learn your main occupation? (Dummy variables - Vocational School (0) vs. University or higher education/ Apprenticeship school/ On the job/ Interior service education/ Vocational course/ Foreman-apprentice relation/ From family)

Reason for not working at a job related to education

Question 49. What is the reason of not working at a job related to your education? (Dummy variables - Couldn't find related job (0) vs. Not interested in education subject/ Education was not efficient/ To continue family occupation/ Insufficient income/ Unsuitable working condition/ Changed job)

Marital status

Question 9. Marital Status? (Dummy variables - Single (0) vs. Married/ Divorced/ Widowed)

Age
Question 4. Age? (Continuous variable)